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AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (currently amended) A method for [[the]] a space-time filtering of noise in radiography comprising:

a. for each pixel having coordinates (x,y) of a first image, a weighting is performed on [[the]] coefficients U(k,l) of a first convolution core with a dimension D, equivalent to a low-pass filter, as a function of a coefficient G which is a function of [[the]] a difference computed between I(x,y) and I(x+k, y+l), where I(x,y) is [[the]] an intensity of the pixel with coordinates (x,y) of the first image, and k and l are indices used to explore the coefficients of the first convolution core, a second convolution core with coefficients Up(k,l) being thus obtained;

b. for each pixel with coordinates (x,y) of the first image, a weighting is performed on the coefficients U(k,l) of the first convolution core as a function of the coefficient G which is a function of the difference computed between I(x,y) and I'(x+k, y+l), where I'(x,y) is [[the]] an intensity of the pixel with coordinates (x,y) of a second image, a third convolution core with coefficients Up'(k,l) being thus obtained; and

c. [[the]] a filtered value of I(x,y) is computed by the formula:

$$F(x,y) = \left(\sum_{k=-L}^{L} \sum_{l=-L}^{L} \left(\gamma * Up(k,l).I(x+k,y+l) + (1-\gamma) * Up'(k,l).I'(x+k,y+l) \right) \right) / N \ldots\ldots(1)$$

$$L = {(D-1)}/{2} \ldots\ldots(2)$$

$$\gamma \in [0,1] \ldots\ldots(3)$$

$$N = \sum_{k=-L}^{L} \sum_{l=-L}^{L} \left(\gamma * Up(k,l) + (1-\gamma) * Up'(k,l) \right) \ldots\ldots(4)$$

where F(x,y) is the filtered value of I(x,y); and
wherein D is greater than 1.

2. (currently amended) The method according to claim 1 wherein:

Up(k,l) = U(k,l)xG(I(x+k,y+l)-I(x,y); σ(I(x,y))); and

[[U'p(k,l)]] Up'(k,l) = U(k,l)xG(I'(x+k,y+l)-I(x,y); $\lambda.\sigma$(I(x,y)))

with G as a weighting function depending on a difference between the value of the pixel to be filtered and its neighborhood and depending on a noise statistic for the value of the pixel to be filtered.

3. (currently amended) The method according to claim 2 wherein G is a function of [[the]] a difference ϵ computed and of a known noise statistic σ for I(x,y), the coefficient G being then written as [[the]] a function G(ϵ, σ), where G is therefore [[the]] a value in terms of ϵ of a Gaussian curve centered on 0 and having a standard deviation σ.

4. (original) The method according to claim 2 wherein G is a function of the computed difference ϵ of the following type:

G(ϵ) = -a. ϵ + 1, with a > 0, et

Up(k,l) = U(k,l)xG(I(x+k,y+l)-I(x,y)), and

U'p(k,l) = U(k,l)xG(I'(x+k,y+l)-I(x,y)).

5. (original) The method according to claim 2 wherein λ is a real number.

6. (original) The method according to claim 3 wherein λ is a real number.

7. (original) The method according to claim 4 wherein λ is a real number.

8. (original) The method according to claim 1 wherein equation (1) becomes:

$$F(x,y)=\left(\sum_{k=-L}^{L}\sum_{l=-L}^{L}\left(\gamma * Up(k,l).I(x+k,y+l)+(1-\gamma)*Up'(k,l).F'(x+k,y+l)\right)\right)/N$$

where F'(x,y) is the filtered intenisity of the pixel with coordinates (x,y) of the second image.

9. (original) The method according to claim 2 wherein equation (1) becomes:

$$F(x,y)=\left(\sum_{k=-L}^{L}\sum_{l=-L}^{L}\left(\gamma * Up(k,l).I(x+k,y+l)+(1-\gamma)*Up'(k,l).F'(x+k,y+l)\right)\right)/N$$

where F'(x,y) is the filtered intensity of the pixel with coordinates (x,y) of the second image.

10. (original) The method according to claim 3 wherein equation (1) becomes:

$$F(x,y)=\left(\sum_{k=-L}^{L}\sum_{l=-L}^{L}\left(\gamma * Up(k,l).I(x+k,y+l)+(1-\gamma)*Up'(k,l).F'(x+k,y+l)\right)\right)/N$$

where F'(x,y) is the filtered intensity of the pixel with coordinates (x,y) of the second image.

11. (original) The method according to claim 4 wherein equation (1) becomes:

$$F(x,y)=\left(\sum_{k=-L}^{L}\sum_{l=-L}^{L}(\gamma * Up(k,l).I(x+k,y+l)+(1-\gamma)*Up'(k,l).F'(x+k,y+l))\right)/N$$

where F'(x,y) is the filtered intensity of the pixel with coordinates (x,y) of the second image.

12. (original) The method according to claim 5 wherein equation (1) becomes:

$$F(x,y)=\left(\sum_{k=-L}^{L}\sum_{l=-L}^{L}(\gamma * Up(k,l).I(x+k,y+l)+(1-\gamma)*Up'(k,l).F'(x+k,y+l))\right)/N$$

where F'(x,y) is the filtered intensity of the pixel with coordinates (x,y) of the second image.

13. (original) The method according to claim 1 wherein a value of γ equal to 0 implies a zero temporal dependence.

14. (original) The method according to claim 2 wherein a value of γ equal to 0 implies a zero temporal dependence.

15. (original) The method according to claim 3 wherein a value of γ equal to 0 implies a zero temporal dependence.

16. (original) The method according to claim 4 wherein a value of γ equal to 0 implies a zero temporal dependence.

17. (original) The method according to claim 5 wherein a value of γ equal to 0 implies a zero temporal dependence.

18. (original) The method according to claim 8 wherein a value of γ equal to 0 implies a zero temporal dependence.

19. (currently amended) The method according to claim 1 wherein the first and second images are successive images of a sequence of images, the first image having a ~~date~~ time t, and the second image having a ~~date~~ time t-1.

20. (currently amended) The method according to claim 2 wherein the first and second images are successive images of a sequence of images, the first image having a ~~date~~ time t, and the second image having a ~~date~~ time t-1.

21. (currently amended) The method according to claim 3 wherein the first and second images are successive images of a sequence of images, the first image having a ~~date~~ time t, and the second image having a ~~date~~ time t-1.

22. (currently amended) The method according to claim 4 wherein the first and second images are successive images of a sequence of images, the first image having a ~~date~~ time t, and the second image having a ~~date~~ time t-1.

23. (currently amended) The method according to claim 5 wherein the first and second images are successive images of a sequence of images, the first image having a ~~date~~ time t, and the second image having a ~~date~~ time t-1.

24. (currently amended) The method according to claim 8 wherein the first and second images are successive images of a sequence of images, the first image having a ~~date~~ time t, and the second image having a ~~date~~ time t-1.

25. (currently amended) The method according to claim 13 wherein the first and second images are successive images of a sequence of images, the first image having a ~~date~~ time t, and the second image having a ~~date~~ time t-1.

26. (original) The method according to claim 1 wherein D is equal to 5.

27. (original) The method according to claim 2 wherein D is equal to 5.

28. (original) The method according to claim 3 wherein D is equal to 5.

29. (original) The method according to claim 4 wherein D is equal to 5.

30. (original) The method according to claim 5 wherein D is equal to 5.

31. (original) The method according to claim 8 wherein D is equal to 5.

32. (original) The method according to claim 13 wherein D is equal to 5.

33. (original) The method according to claim 19 wherein D is equal to 5.

34. (original) The method according to claim 1wherein D is greater than 5.

35. (original) The method according to claim 2 wherein D is greater than 5.

36. (original) The method according to claim 3 wherein D is greater than 5.

37. (original) The method according to claim 4 wherein D is greater than 5.

38. (original) The method according to claim 5 wherein D is greater than 5.

39. (currently amended) The method according to claim [[5]] <u>8</u> wherein D is greater than 5.

40. (currently amended) The method according to claim [[8]] <u>13</u> wherein D is greater than 5.

41. (original) The method according to claim 19 wherein D is greater than 5.

42. (cancelled)

43. (original) The method according to claim 1 wherein D is an odd number.

44. (original) The method according to claim 2 wherein D is an odd number.

45. (original) The method according to claim 3 wherein D is an odd number.

46. (original) The method according to claim 4 wherein D is an odd number.

47. (original) The method according to claim 5 wherein D is an odd number.

48. (original) The method according to claim 8 wherein D is an odd number.

49. (original) The method according to claim 13 wherein D is an odd number.

50. (original) The method according to claim 19 wherein D is an odd number.

51. (original) The method according to claim 26 wherein D is an odd number.

52. (original) The method according to claim 34 wherein D is an odd number.

53. (original) A space-time convolution filter designed according to the method of claim 1.

54. (original) A scanner for radiography having a filter according to claim 53.

55. (cancelled)

56. (currently amended) A computer program product comprising a computer ~~useable~~ readable medium having computer readable program code means ~~embodied~~ stored in the medium, the computer program product comprising:

a. computer readable program code means ~~embodied~~ stored in the medium for causing a computer to provide for each pixel having coordinates (x,y) of a first image, a weighting is performed on [[the]] coefficients U(k,l) of a first convolution core with a dimension D, equivalent to a low-pass filter, as a function of a coefficient G which is a function of [[the]] a difference computed between I(x,y) and I(x+k, y+l), where I(x,y) is [[the]] an intensity of the pixel with coordinates (x,y) of the first image, and k and l are indices used to explore the coefficients of the first convolution core, a second convolution core with coefficients Up(k,l) being thus obtained;

b. computer readable program code means ~~embodied~~ stored in the medium for causing a computer to provide for each pixel with coordinates (x,y) of the first image, a weighting is performed on the coefficients U(k,l) of the first convolution core as a function of the coefficient G which is a function of the difference computed between I(x,y) and I'(x+k, y+l), where I'(x,y) is [[the]] an intensity of the pixel with coordinates (x,y) of a second image, a third convolution core with coefficients Up'(k,l) being thus obtained; and

c. computer readable program code means ~~embodied~~ stored in the medium for causing a computer to provide [[the]] a filtered value of I(x,y) is computed by the formula:

$$F(x,y) = \left(\sum_{k=-L}^{L} \sum_{l=-L}^{L} \left(\gamma * Up(k,l).I(x+k,y+l) + (1-\gamma) * Up'(k,l).I'(x+k,y+l) \right) \right) / N \ldots\ldots(1)$$

$$L = {(D-1)}/{2} \ldots\ldots(2)$$

$$\gamma \in [0,1] \ldots\ldots(3)$$

$$N = \sum_{k=-L}^{L} \sum_{l=-L}^{L} \left(\gamma * Up(k,l) + (1-\gamma) * Up'(k,l) \right) \ldots\ldots(4)$$

where $F(x,y)$ is the filtered value of $I(x,y)$; and
wherein D is greater than 1.

57. (currently amended) An article of manufacture for use with a computer system, the article of manufacture comprising a computer readable medium having computer readable program code means ~~embodied~~ stored in the medium, the program code means comprising:

a. computer readable program code means ~~embodied~~ stored in the medium [[foor]] for causing a computer to provide for each pixel having coordinates (x,y) of a first image, a weighting is performed on [[the]] coefficients $U(k,l)$ of a first convolution core with a dimension D, equivalent to a low-pass filter, as a function of a coefficient G which is a function of [[the]] a difference computed between $I(x,y)$ and $I(x+k, y+l)$, where $I(x,y)$ is [[the]] an intensity of the pixel with coordinates (x,y) of the first image, and k and l are indices used to explore the coefficients of the first convolution core, a second convolution core with coefficients $Up(k,l)$ being thus obtained;

b. computer readable program code means ~~embodied~~ stored in the medium [[foor]] for causing a computer to provide for each pixel with coordinates (x,y) of the first image, a weighting is performed on the coefficients $U(k,l)$ of the first convolution core as a function of the coefficient G which is a function of the difference computed between $I(x,y)$ and $I'(x+k, y+l)$, where $I'(x,y)$ is [[the]] an intensity of the pixel with coordinates (x,y) of a second image, a third convolution core with coefficients $Up'(k,l)$ being thus obtained; and

c. computer readable program code means ~~embodied~~ stored in the medium [[foor]] for causing a computer to provide [[the]] a filtered value of $I(x,y)$ is computed by the formula:

$$F(x,y) = \left(\sum_{k=-L}^{L} \sum_{l=-L}^{L} (\gamma * Up(k,l).I(x+k,y+l) + (1-\gamma) * Up'(k,l).I'(x+k,y+l)) \right) / N .....(1)$$

$$L = {(D-1)}/{2} .....(2)$$

$$\gamma \in [0,1] ....(3)$$

$$N = \sum_{k=-L}^{L} \sum_{l=-L}^{L} (\gamma * Up(k,l) + (1-\gamma) * Up'(k,l)) ....(4)$$

where F(x,y) is the filtered value of I(x,y); and
wherein D is greater than 1.

58. (new) The method according to claim 1 wherein a value of γ is greater than 0 and less than 1.

59. (new) The computer program product according to claim 56 wherein a value of γ is greater than 0 and less than 1.

60. (new) The article of manufacture according to claim 57 wherein a value of γ is greater than 0 and less than 1.